DOINGWHATWORKS

Presentation

FULL DETAILS AND TRANSCRIPT

Teaching Fractions in Grade 2

Worthington Hooker School, Connecticut • June 2008

Topic: National Math Panel: Critical Foundations for Algebra
Practice: Mathematics Preparation for Algebra

Highlights

- Introducing fractions to second grade students near the end of the year
- Teacher describes review lesson
- Asking students for different representations of value, including fractions, percents, decimals
- Revisiting the concept of fractions in many different ways—through portions of area, clock, money, measurement, unifex cubes
- Determining whether students understand concepts of fractions

About the Site

Worthington Hooker School
New Haven, CT

Demographics
45% White

25% Black

22% Asian

7% Hispanic

37% Free or Reduced-Price Lunch

11% English Language Learners

6% Special Education

The Worthington Hooker mathematics program exemplifies the goals of the New Haven School District in holding high expectations for all students and preparing them for STEM career options. The school implements these features:

- Focus on fewer topics at deeper level of understanding;
- Cross-grade units with " significant tasks;"
- Benchmark testing four to seven times a year;
- Extensive focus on number sense and fractions;
- Roles for specialist teachers (i.e., physical education, music, visual arts) in providing additional math practice;
- Bi-monthly school level data team meetings; and
- Monthly coaches meetings at a district level to review results of school-level data team meetings.

Full Transcript

Slide 1

Welcome to Teaching Fractions in Grade 2.

Slide 2

My name is Kathy Lembo. I am teaching second grade at Worthington Hooker School in New Haven, Connecticut.

Slide 3

Second graders are introduced to fractions toward the end of the year. We move into multiplication first, and we cover twos, fives and tens. We sequence, we break numbers apart, and so forth, and then we go into fractions for a very short period of time—couple weeks, basically. They do add the numerators; they add some fractions with the same denominator. By the time they get to third grade, they will be adding

and subtracting larger fractions with more value to the fractions, instead of a half, a fourth, so forth—the easier ones—a third. And they will get into decimals a little bit more, and they will represent the decimal equivalent to the fraction a little bit more than we were. We are just touching upon fractions. But a population like this, you have to expand a little bit.

Slide 4

It's year's end, we have basically completed the curriculum. So at this point we are reviewing, and we zeroed in on fractions yesterday. What I had asked the kids to do was to define, just to explain the concept of fraction, and also to represent a fraction. We started with halves, we moved into fourths to represent a fraction in different ways, and we used life skills situations. For example, we talked about purchasing something on sale and we turn a half into 50%, what is 50% of $200, $300 and so forth.

Slide 5

We moved into percentages. We moved into currency. We represented a half with 50 cents written with the cent sign. We used decimals. We were asking for representation in many different ways. That's what we do with mathematics. We look for perspectives. We look to problem solve from many different points of view.

Slide 6

They were also given a handout, and in front of them they saw number strips. And one was presented as a whole, one was cut in half, one was cut into thirds. And they had to determine that all the strips were of the same length, and they also took a look at three-quarters and two-thirds, for example, and they had to tell which was longer. And they had to hold their finger at the end or use another piece of paper to determine, "Oh gee, this one's a little bit longer than the other," even though the numerator was so close to the denominator, one had more length than the other one.

Slide 7

And in regard to area, the kids had graph paper in front of them, and I was asking them to show me four squares, and to show me one out of four, two out of four, and so forth, shaded or unshaded. We moved into other fractional amounts. I also asked the kids to show me the same area using eighths and sixteenths, so some of the kids at that point would cut one of the squares on the graph paper in half or into four parts. That wasn't something that everybody in the room could do, but it was fun for the kids to turn to their peers and say, "Let me explain this to you." I think they learn best from each other, so it's just an extension. Some

of the kids in the room would really need to work with me separately later on, and that's where I model and then bring in the peers later on with the manipulatives.

Slide 8

Through this review we attempted to revisit the concept of fractions. We used rulers. we used handouts. We used clocks, yardsticks.

Slide 9

We also used Unifix cubes. The kids turned to each other and asked that they separate the cubes. For example, one child would ask, "Would you place three tenths?"—they were given ten cubes—"Would you place three tenths at the top of the desk and stand up seven tenths?" We used anything we could find in the room—anything around us at the time—just to discuss the concept of fractions from many different perspectives.

Slide 10

At the end of the lesson, I stood before them with a play clock and yardstick, and I asked, "What do these things have to do with fractions?" And the kids jumped right into, "Oh, quarter after, half past, quarter of, o'clock, 60 minutes." We are breaking them into 15-minute sections. Oh yeah, the ruler, well, let's see: from zero to one if we are looking at the yardstick and we are thinking linear, there are 16 little sections between the zero and one, for example. They also have a little metric ruler in front of them in the paper form. And they noticed that, again, they were thinking, "Oh, we are talking tenths, hundredths here, we are not talking 12ths, 24ths, 36ths…" And these from the zero to the one, and we seemed to be separating in half, maybe quarters, that's about it—separated a little differently on the linear side.

Slide 11

These skills are important to all of us as human beings. I think we live with—everything is fractional when you think about it. We don't need to talk about squares, for example, on graph paper. We can be talking about human beings—as equal human beings—even though we don't all look the same, we are 24 in number and we are in four groups of six. The concept of a part, or a piece especially, an equal part, comes up in every part of the curriculum, especially when we are counting money, graphing, making tables and so forth, the fraction always comes up.

Slide 12

To determine whether a child really understands a given concept, we usually ask that the child explain a solution for many different points of view, and by that I mean the child could verbalize, the child can enact something, present something to the class, write about it. There are so many different ways, and that's what we are expecting and we also base lot of things on speed: How would you do that many different ways? How quickly can you tell the class, "Oh, I would do it this way, that way and the other way"? We are not looking for one solution to any problem. At year's end, I have at least attempted and was successful in some degree to empower them with the strategies that they can use to problem solve.

Slide 13

To learn more about teaching fractions, please see the additional materials on the Doing What Works website.